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## DISPOSABLE WIPING TOOL

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[There are no amendments to this patent.]

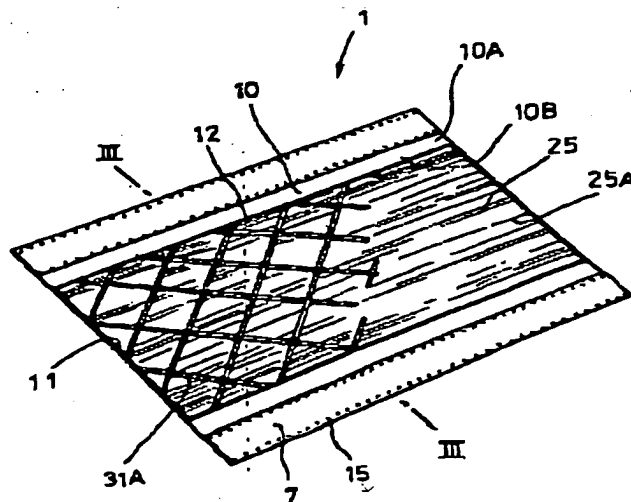
Abstract

Subject

To add the effect of scraping off dirt to a disposable wiping tool suitable for collecting cotton-like dust.

Means to solve

On a disposable wiping tool (1) wherein an aggregate (25A) or (25B) of either many long fibers (25) that extend in parallel in one direction or many short fibers that mechanically entangle with one another is interposed between two sheet materials (10) and (31), at least one of the sheet materials is a reticulate material (31), the size of the reticulation is within the range of  $7/10$ - $2/10$  of the mean fiber length of the aggregate (25A) or (25B), and the reticulate sheet (31) has a higher rigidity than the component fiber of the aggregate (25A) or (25B).



## Claims

1. Disposable wiping tool characterized by the following constitution: A fiber aggregate of either many long fibers that extend in parallel in one direction or many short fibers that mechanically entangle with one another is interposed between two sheet materials. The aforementioned two sheet materials are bonded to each other at the part that extends out of the periphery of the aforementioned aggregate. At least one of the aforementioned two sheet materials is a reticulate sheet with a higher rigidity level than the fiber that constitutes the aforementioned aggregate, and the size of the reticulation of said sheet is within the range of  $7/10$ - $2/10$  of the mean fiber length of the aforementioned aggregate.

2. Tool in accordance with Claim 1 wherein each of the aforementioned two sheet materials is composed of hot-melt plastic, and they are welded to each other at the part that extends out of the peripheral part of the aforementioned aggregate.

3. Tool in accordance with Claim 1 or 2 wherein the aforementioned aggregate is composed of many long fibers that extend in parallel in one direction, and both ends of said fibers are welded to at least one of the aforementioned two sheet materials.

4. Tool in accordance with Claim 1 or 2 wherein the aforementioned aggregate is a fiber web obtained by processing short fibers with a combing machine.

## Detailed explanation of the invention

[0001]

### Technical field of the invention

This invention pertains to a disposable tool to wipe dirt or dust off a floor, wall or other surface.

[0002]

### Prior art

When this type of tool is used to clean a wood or plastic floor, a relatively bulky fiber aggregate can be used as one of the means for improving the elasticity (cushion property) in the thickness direction. It is also possible to impregnate the fibers with an appropriate oil agent to improve their ability to wipe up dust or dirt.

[0003]

### Problems to be solved by the invention

When a fiber aggregate is bulky and highly elastic, wiping the floor surface lightly is easy. On the other hand, scraping dirt off a floor surface is difficult.

[0004]

The object of this invention is to obtain a wiping tool that can scrape off dirt even when a relatively bulky fiber aggregate is used.

[0005]

Means to solve the problem

To solve the aforementioned problem, this invention is a disposable wiping tool characterized by the following constitution: A fiber aggregate of either many long fibers that extend in parallel in one direction or many short fibers that mechanically entangle with one another is interposed between two sheet materials. The aforementioned two sheet materials are bonded to each other at the part that extends out of the periphery of the aforementioned aggregate. At least one of the aforementioned two sheet materials is a reticulate sheet with a higher rigidity level than the fiber that constitutes the aforementioned aggregate, and the size of the reticulation of said sheet is within the range of  $7/10$ - $2/10$  of the mean fiber length of the aforementioned aggregate.

[0006]

Embodiment mode of the invention

Details of a disposable wiping tool in accordance with this invention will be explained next with reference to the attached figures.

[0007]

Figure 1 is an oblique view of a disposable wiping tool (1) and a cleaning tool (2) on which the wiping tool is installed. The cleaning tool (2) has a base (3) on which the tool (1) is installed and a handle (4). The side hem part (7) of the tool (1) that is in contact with the lower face of the base (3) is folded and superposed onto the upper face of the base (3), and is fixed onto the upper face with a clip (8) of the base (3). When the cleaning tool (2) is used in this state, the user holds the handle (4) and lightly wipes the floor surface with the tool (1).

[0008]

The tool (1) illustrated in an oblique view in Figure 2 is that of Figure 1 expanded. Figure 3 is a cross-sectional view along line III-III of Figure 2.

[0009]

In Figures 2 and 3, the tool (1) is comprised of a rectangular sheet member (10) composed of either a hot-melt

plastic sheet or nonwoven cloth, fiber layers (25A) and (25B) composed of many long fibers (25) that are respectively located on the upper and the lower faces (10A) and (10B) of the member (10) and extend in parallel in one direction, and reticulate sheet members (31A) and (31B) that cover respective fiber layers (25A) and (25B).

[0010]

Each of the side hem parts (7) that extend in the long direction of the sheet member (10) is folded and superposed, and welded at many points (15) that are illustrated.

[0011]

The fiber layers (25A) and (25B) are obtained by opening the tows of continuous filament composed of, for instance, a thermoplastic synthetic resin into necessary width and cutting them into necessary length. The long fibers (25) obtained by the cutting extend in the long direction of the sheet member (10), having each of both ends welded at the bonding line (11) in the end hem part of the sheet member (10), and are parallel with one another between both ends in a state either mechanically entangled to a certain degree or not entangled at all. Preferably, the long fiber (25) has a fiber diameter of 2-20 denier, and basis weight of 200-3,000 g/m<sup>2</sup>, so that relatively bulky and soft fiber layers (25A) and (25B) will be obtained.



[0012]

The reticulate sheet members (31A) and (31B) have higher rigidity than that of the long fiber (25). For said members, one that is comprised by knitting filament or twisted yarn with a fiber diameter of 30 denier or above composed of a thermoplastic synthetic resin in reticulation, or one comprised by forming many openings on a thermoplastic synthetic resin film that is 0.05 mm thick or thicker, etc. can be used. The reticulation preferably has a size within a range of 7/10-2/10 of the length of the long fiber (25), and the percentage of opening area within a range of 30-90%. The reticulate sheet members (31A) and (31B) may be welded to the sheet member (10) at the bonding line (12) that extends in the long direction, or may be welded along with the fiber layer (25) at the bonding line (11).

[0013]

With a tool (1) constituted in this manner, light cotton-like dust on a floor surface can be wiped off by the fiber layers (25A) and (25B) that peep through the reticulation of the sheet members (31A) and (31B). An oil solution may also be impregnated in the fiber layers (25A) and (25B) to improve wiping performance. Also, if a floor surface is rubbed forcefully with the tool (1), the rigid reticulate sheet members (31A) and (31b) will function so as to scrape off the dirt from the floor surface. Thus, dirt that is hard to remove with the fiber layers (25A) and (25B) can be collected.

[0014]

On the tool (1), the fiber layers (25A) and (25B) composed of long fibers (25) may be substituted with a fiber web obtained by processing short fibers with a card machine. In such a web, the fibers are mechanically entangled with one another and form a bulky aggregate. When this type of web is used, the size of the reticulation of the reticulate sheet members (31A) and (31B) are made to be  $7/10$ - $2/10$  of the mean fiber length of the web, so the fiber will not fall off the reticulation easily. The fibers layers on the sheet member (10), besides having two layers of (25A) and (25B) as illustrated, may be comprised of only one layer. The tool (1), besides being installed on a cleaning tool (2), may also be used directly by hand.

[0015]

#### Effect of the invention

With a disposable wiping tool in accordance with this invention, light dust can be wiped off by a bulky fiber aggregate comprised of component fibers either arranged in parallel or mechanically entangled. The fibers can be prevented from falling off the tool by means of a relatively rigid reticulate sheet that covers the fiber aggregate and which can also scrape dirt off a floor surface.

Brief description of the figures

Figure 1 is an oblique view of a cleaning tool with a wiping tool installed on it.

Figure 2 is an oblique partially broken off view of a wiping tool.

Figure 3 is a cross-sectional view along line III-III of Figure 2.

- 1 Wiping tool
- 10 Sheet material (sheet member)
- 25 Long fiber
- 25A, 25B Fiber layer (fiber aggregate)
- 31A, 31B Reticulate sheet

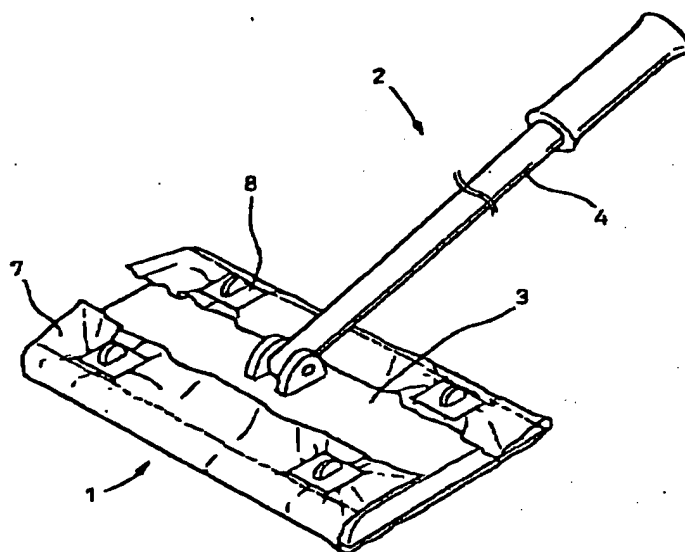


Figure 1

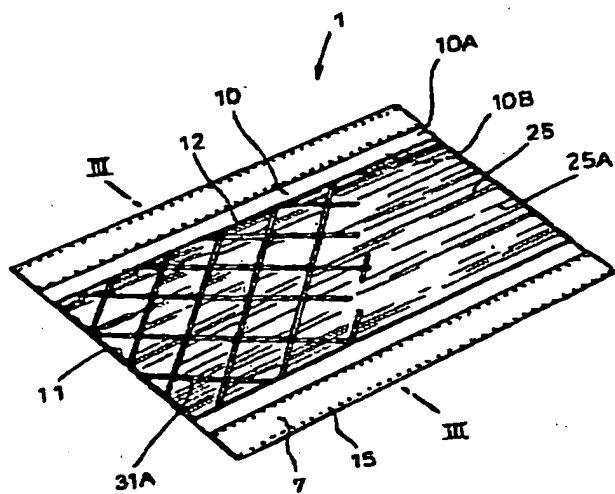


Figure 2

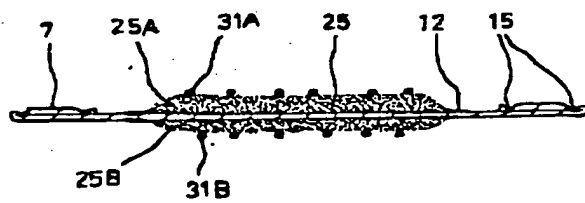


Figure 3

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